

Appln. N . 09/924,312

Response Under 37 C.F.R. § 1.111 dated December 1, 2003

Response to Office Action dated September 3, 2003

REMARKS

Claims 16-28 and 30-34 are pending in this application. Claims 16, 20-28 and 30-34 have been allowed, and claims 17-19 have been rejected. The claims have been maintained unchanged¹. Claims 16-20, 25 and 30 are independent.

The Examiner is thanked for the indicated allowability of claims 16, 20-28 and 30-34. Since those claims have not been altered, they are believed to remain allowable at least for the reasons already given.

Turning to the outstanding rejections, Applicants submit the following remarks.

The Rejections Under 35 U.S.C. § 102

Claims 17 and 18 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,454,518 to Bangs. Applicants respectfully traverse this rejection and submit the following argument in support thereof.

As recited in claim 17, this invention is directed to a method of manufacturing an ink cartridge for use in an ink jet recorder. This is done by heating ink to a temperature of at least approximately 10 C° above the ambient temperature of the ink while it is being injected into the ink cartridge. The ink is a liquid even when unheated.

Claim 18 describes a method of manufacturing an ink cartridge for use in an ink jet recorder by heating ink while it is being injected into the ink cartridge. The ink is liquid even

¹ As is encouraged by PTO practice, this Response includes a claim listing setting forth all the pending claims. See "Revised Amendment Practice Questions & Answers (FAQs)" available on the PTO website at <http://www.uspto.gov/wcb/offices/pac/dapp/revised121qnas.htm>.

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when unheated. The ink is heated to a temperature of between approximately 10 C° and 20 C° above the ambient temperature of the ink.

Bangs states, in its Abstract, that a goal is to prevent air bubbles in ink. However, Bangs does this using a heater 40 to heat ink 12 contained in an ink reservoir 10 connected to print head 18 (col. 4, line 10 et seq. and Fig. 1). In other words, Bangs heats the reservoir itself to warm the ink contained therein.

This, however, in no way suggests the step of heating ink during ink injection into an ink cartridge, in the manner of the claimed invention. In other words, in the present invention, ink is heated as it is being filled into the ink tank, and so the ink contained in the ink tank will contain less dissolved gas than if it were not heated. Such ink will be less likely to form bubbles in the ink tank. Bangs' ink, however, is introduced into the tank without degassing treatment - this means that the ink in Bangs' tank can develop bubbles immediately after filling, and until that ink is heated during printer operation.

For all the foregoing reasons, favorable reconsideration and withdrawal of this rejection are respectfully requested.

Claims 17-19 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,182,572 to Merritt et al. Applicants respectfully traverse this rejection and submit the following argument in support thereof.

Claims 17 and 18 already have been summarized in response to the rejection based on Bang.

As recited in claim 19, this invention is directed to a method of manufacturing an ink cartridge for use in an ink jet recorder. This involves heating ink, the ink being liquid even

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when unheated, while it is being injected into the ink cartridge, to a temperature that is more than 20 C° above the ambient temperature of the ink.

Merritt uses a phase-change ink (col. 3, lines 51-57), and it should be noted that Merritt distinguishes and disparages the use of liquid inks, that is, ink which are liquid even when stored at ambient temperature (col. 1, lines 40-61). Merritt's ink is heated by immersing the reservoir 28 filled with the solid ink into a hot water bath 32 or other suitable heating means, as well as by heating the coupling tube 30 and the jet structure with an infrared light 34 (col. 4, lines 9-14; Fig. 1).

Merritt differs from the present invention for several reasons.

First, Merritt's ink is significantly different from the type of ink used in the present invention. The present invention is directed to the use of liquid ink (meaning ink that is liquid at ambient temperature), whereas Merritt disparages liquid ink and instead uses hot-melt ink, that is, ink which is solid at ambient temperature and which only liquefies when it is heated.

Second, Merritt only teaches heating the container holding the ink and the flow path and ejection head through which the ink flows. In other words, ink is put in the container and after that is heated, just as is done in Bangs, also distinguished on this ground from this invention. Such a procedure in no way even suggests heating ink **during ink injection into the ink cartridge**, in the manner of the present invention. This is an important difference - this invention charges the ink tank with degassed ink, whereas in the other schemes, the ink is not degassed until after it is in the ink tank.

For all the foregoing reasons, favorable reconsideration and withdrawal of this rejection are respectfully requested.

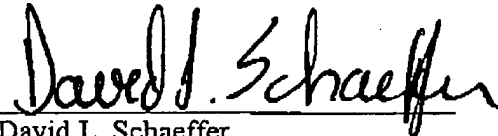
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CONCLUSION

Applicants respectfully submits that all outstanding objections and rejections have been addressed and are now either overcome or moot. Applicants further submit that all claims pending in this application are patentable over the prior art. Favorable reconsideration and withdrawal of those rejections and objections is respectfully requested.

Favorable consideration and prompt allowance of this application is respectfully requested. In the event that there are any questions, or should additional information be required, please do not hesitate to contact Applicants' attorney at the number listed below.

Respectfully submitted,



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